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...HOW TO CONTROL CATTLE GRUBS

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How To Control CATTLE GRUBS

Two kinds of cattle grubs are found in the United States.

The common cattle grub¹ occurs in all 48 adjacent States. The northern cattle grub² is abundant in Canada and the Northern United States, and occurs as far south as an imaginary line through southern California and the northern parts of Arizona, Oklahoma, Tennessee, and South Carolina.

Except for an infestation first reported in Chile in 1959, cattle grubs are confined to the Northern Hemisphere.

LIFE CYCLE

The adult insects (heel flies) lay their eggs on the heels, legs, and other body parts of cattle. The eggs hatch into larvae (grubs) in 3 or 4 days.

Soon after hatching, the young grubs burrow into the skin and slowly work their way through the animal's body until they reach the gullet (common cattle grub) or spinal canal (northern cattle grub). The grubs remain in the gullet or spinal canal several months before starting another migration, this time to the muscles in the animal's back.

When the grubs reach the ani-

mal's back, they settle just beneath the hide and cut breathing holes through it. At this time, you may notice swellings, often called warbles or wolves, forming beneath the hide. The grubs remain in the animal's back about 6 weeks. During this period, they gradually enlarge their breathing holes.

When full grown, the spiny grubs work their way out through the breathing holes and drop to the ground, where they change to pupae. Three to 10 weeks later, the time depending upon the temperature, the adult heel flies emerge from the pupal cases and are ready for mating and egg laying. The entire life cycle takes about a year, 8 to 11 months of which are spent as grubs in the bodies of cattle.

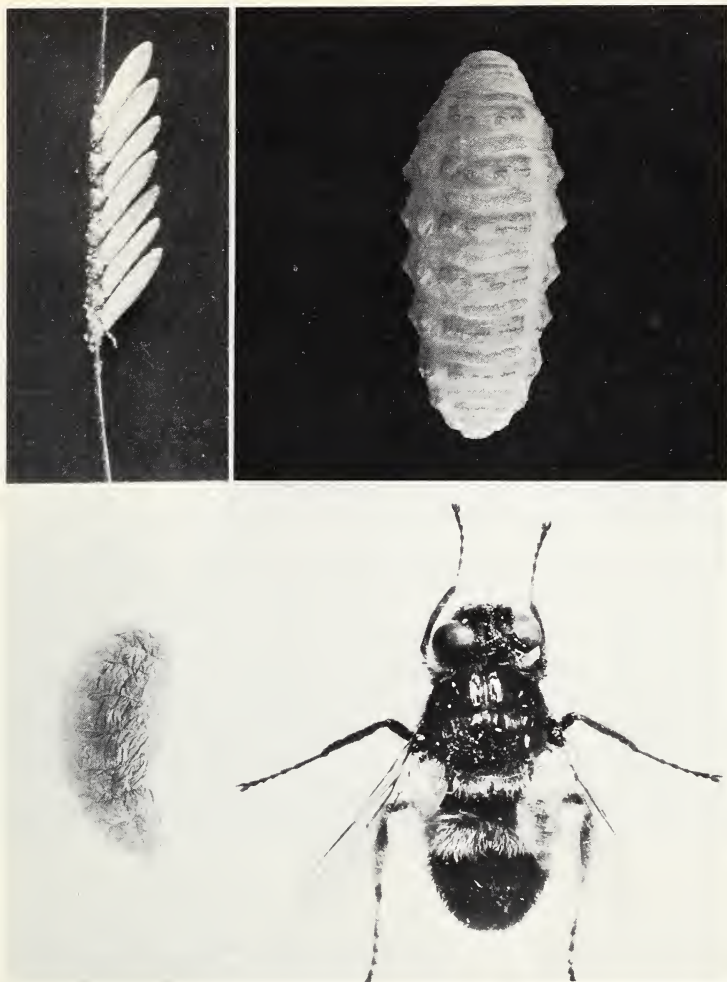
LOSSES

Cattle grubs probably cause greater losses than any other pest of cattle. Besides damaging meat and hides by their burrowing, they lower beef cattle gains and milk production of dairy cattle throughout the year. Beef cattle producers and dairymen often fail to notice the hidden toll these insects take, but profit losses are estimated in the millions of dollars each year.

The losses begin when heel flies

¹ *Hypoderma lineatum*.

² *H. bovis*.



M & A 9165

Common cattle grub: *top left*, eggs; *top right*, larva; *bottom left*, pupa; *bottom right*, adult fly.

lay their eggs on the cattle. The heel flies cause no pain to cattle, but they frighten the animals and make them difficult to manage. When attacked, cattle run about wildly with their tails in the air, and are often injured in this wild stampeding.

Cattle find some relief from heel flies by standing for hours in deep shade or water. Failure to graze

during this period causes reduced milk production and subnormal weight gains.

At slaughter, some of the meat must be trimmed from expensive cuts and discarded. Tissues underlying the warbles are yellowish and gelatinlike. The butcher calls this "licked beef," a material that must be removed from the carcass. Besides the actual loss of

meat, the carcass is downgraded, and brings a lower price. Trim loss on heavily infested carcasses may range from \$5 to \$7.

The usefulness of a grubby, perforated hide for leather is reduced, and its sale value is greatly lowered.

CONTROL

Five systemic insecticides, famphur, ronnel, coumaphos, trichlorfon, and Ruelene,³ give excellent control of grubs in beef cattle. Control in dairy cattle is more difficult because these systemics can only be used on nonlactating dairy animals within a specified time before freshening.

The insecticides are called systemics because they are distributed inside the body of the animal. The circulatory system carries the insecticide to the site where the grubs occur.

Control in Beef Cattle

The five systemic insecticides are equally effective in controlling grubs in beef cattle, but they differ in means of application.

The proper timing of systemic insecticide application is important. Only one application is necessary, but it should be made as soon as possible after all heel fly activity has stopped. Early applications are safer and more effective than later ones. Treat-

³ Trade names are used in this publication solely for the purpose of providing specific information. Mention of trade names does not constitute a guarantee or warranty of the products named.

ment time ranges from late spring to fall in southern States, and from early summer to late fall in northern States. For more detailed information on exact timing in your locality, consult your county agent or State extension entomologist.

Ronnel.—Cattle grub treatments with ronnel are made by feeding the insecticide to the animals. Purchase a product containing a purified grade of the insecticide specifically labeled for such use.

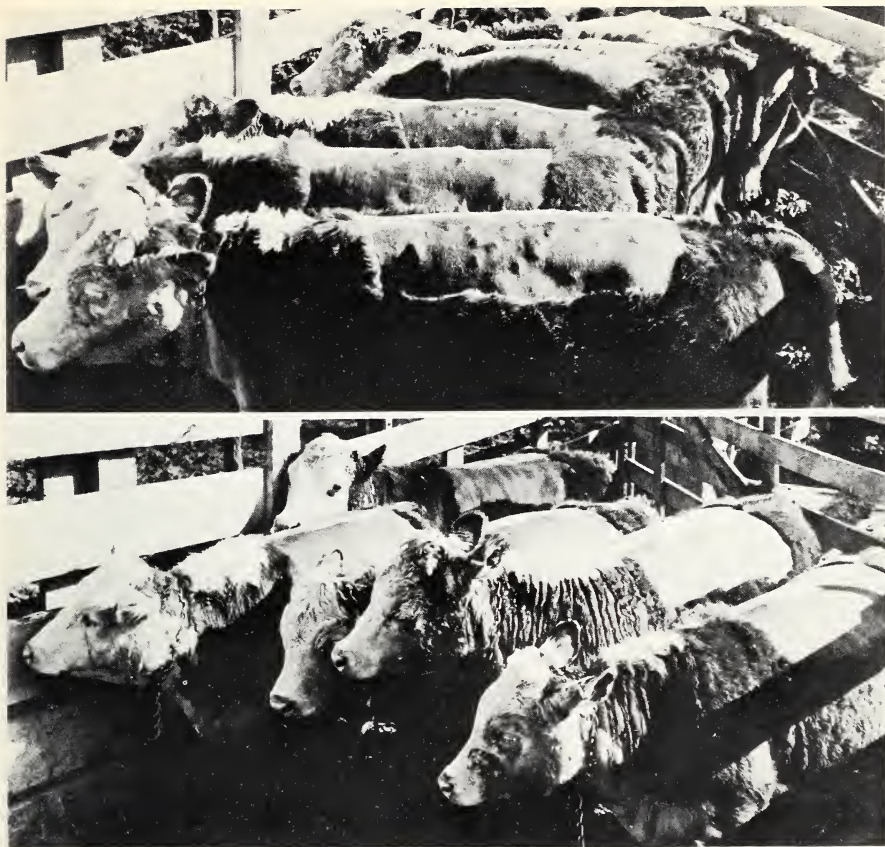
One registered ronnel product should be mixed with feed to make a feed mixture containing 0.26 percent of ronnel. This mixture should be fed at the rate of 0.3 pound daily per 100 pounds of body weight of the cow for 14 consecutive days.

Other ronnel products may be purchased already mixed with feed and minerals. One such feed mixture contains 0.6 percent of ronnel and should be fed at the rate of 0.3 pound daily per 100 pounds of body weight of the cow for 7 consecutive days.

Instructions printed on the labels of these ronnel products must be followed carefully in mixing, and also in feeding.

Ronnel feed mixtures and feed supplements should be offered in covered feeders. Locate the feeders where the cattle will easily find and eat the treated feed.

Make certain adequate feeding space is available so each animal can get its share. Provide one feeder per 15 to 20 head of cattle. If the cattle do not eat the



M & A 14138

The backs of these animals have been clipped. *Above:* Grub-infested cattle were untreated. *Below:* Grub-free cattle were treated with a systemic insecticide.

desired amounts, add some palatable feed, such as soybean meal, to the treated feed. Feed this for a few days, then return to the regular ronnel-treated feed mixture for the remainder of the feeding period.

Ronnel is also available in a salt block. It contains 5.5 percent of ronnel. The block should be offered continuously for a minimum of 75 days after heel fly activity has stopped. Blocks must be placed where cattle will easily

find them, preferably near watering and loafing areas. Provide one block per 15 head of cattle. Do not feed salt in any other way while cattle are supplied with the blocks. See that cattle have access to treated blocks at all times.

Do not use a ronnel feed additive and a ronnel mineral supplement at the same time.

Ronnel treatments must be completed 21, 28, or 60 days before slaughter so none of the in-

The registrations for the use of rotenone on dairy cattle, and ronnel, rotenone, and Ruelene on beef cattle were extended to January 1, 1971, pending the establishment of tolerances for residues on raw agricultural products. These registrations may be canceled after that date if tolerances are not established. Do not use any of these insecticides for the indicated uses after January 1, 1971, without first determining if the registration remains effective. Check with your county agricultural agent or with your State agricultural experiment station.

secticide will be present in the meat or fat at slaughter. The waiting period between the last treatment and slaughter depends on the formulation used—check the label.

Coumaphos (Co-ral).—You can use coumaphos as a spray, dip, or pour-on treatment. Purchase the wettable-powder formulation and dilute according to label directions, or purchase the pour-on solution.

For spraying, apply either a 0.375-percent⁴ or 0.25-percent concentration. If a 0.25-percent spray is used, make two applications not more than 90 days apart. Apply the 0.375-percent spray or the second 0.25-percent spray

soon after heel fly activity has stopped. Apply a light spray to animals 3 to 6 months old. Spray older animals until the entire body is wet to the skin. For a dip treatment, use a 0.25-percent concentration.

In using a pour-on treatment, follow the manufacturer's instructions on the product label.

Do not treat animals less than 3 months old. Do not treat animals with coumaphos for 10 days before or after shipping or weaning, or after exposure to contagious diseases. Do not apply in conjunction with oral drenches or other internal medications, such as phenothiazine, nor with pyrethrins, allethrine, or synergist. Do not dip overheated animals.

Ruelene.—You can apply Ruelene as a spray or pour-on treatment. Purchase an emulsifiable liquid and dilute it according to label directions. For the spray treatment, apply a 0.375-percent concentration and wet the animal's entire body to the skin.

For the pour-on treatment, follow the manufacturer's directions on the product label.

Spray and pour-on treatments with Ruelene must be completed at least 28 days before slaughter.

Do not apply Ruelene as a pour-on in extremely hot or humid weather; it may irritate the animal's skin.

Trichlorfon.—You can apply trichlorfon as a spray or pour-on treatment. Purchase a soluble powder and dilute it according to label directions. For the spray treatment, apply a 1-percent con-

⁴ A spray containing 0.5 percent of coumaphos may be used in northern areas or for late fall applications when long coats make thorough wetting of the skin difficult.



BN-35061

A whole-animal spray for fly and grub control. Animal should be uniformly wet to the skin. Some insecticides applied in late summer or early fall provide treatment for internal grub larva, horn flies, and lice.

centration and wet the animal's entire body to the skin.

For the pour-on treatment, follow the manufacturer's directions on the product label.

Spray and pour-on treatments must be completed at least 14 days before slaughter.

Do not use on dairy animals. Do not treat animals less than 3 months old. Do not treat 10 days before or after shipping, weaning, or exposure to contagious diseases. Do not apply in conjunction with oral drenches or other internal medications.

Famphur.—You can use famphur as a 13.3 percent pour-on treatment or it can be given to the animal in a feed-mix. Feed-mix formulations are purchased in ready-to-feed concentrations. Instructions printed on the labels of these famphur products must

be followed carefully to assure that each animal gets his share.

For the pour-on treatment, follow the manufacturer's directions on the product label. Pour-on treatment must be completed at least 35 days before slaughter.

Control in Dairy Cattle

Systemic insecticides.—Although systemic insecticides can be used on dairy cattle, they are limited to nonlactating animals. Ruelene may be used on dry dairy animals, but it should not be applied within 28 days of freshening. Coumaphos must not be used within 14 days, and ronnel within 21, 28, or 60 days, of freshening. The waiting period depends on the formulation used—see label.

Rotenone.—For most dairy cattle, rotenone or derris must be used. A high-pressure sprayer

gives the best results when a large number of cattle are being treated. Purchase a 5-percent wettable powder. Mix 7½ pounds in 100 gallons of water. Spray animals until the entire body is wet to the skin. Make two or three applications at 30-day intervals. Make the initial application about 30 days after the first warbles appear.

A dry derris dust containing 1.5 percent of rotenone may be rubbed into the grub holes. A wash treatment can be prepared by mixing 12 ounces of a 5-percent rotenone wettable powder in 1 gallon of water. Use a sponge or brush to apply about 1 pint of the mixture per animal. Both of these methods are inefficient when a large number of cattle are to be treated.

PRECAUTIONS

Insecticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels. Also, observe all the precautions included in the discussions of ronnel, coumaphos, trichlorfon, Ruelene, and famphur in this publication.

Do not overdose. Do not use more than one systemic insecticide. For example, if you use one systemic as a feed additive, do not apply another as a spray, dip, or pour-on.

Do not apply an insecticide to an animal that is sick, weak, or stressed.

Store insecticides in original containers under lock and key—out of the reach of children and animals—and away from food and feed.

Apply insecticides so that they do not endanger humans, livestock, crops,

beneficial insects, fish, and wildlife. Do not apply insecticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of insecticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with an insecticide, do not eat or drink until you have washed. In case an insecticide is swallowed or gets in the eyes, follow the first-aid treatment given on the label, and get prompt medical attention. If an insecticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty insecticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.

NOTE: Some States have restrictions on the use of certain insecticides. Check your State and local regulations. Also, because registrations of insecticides are under constant review by the U. S. Department of Agriculture, consult your county agricultural agent or State Extension specialist to be sure the intended use is still registered.



Prepared by

**Entomology Research Division
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Cover photo: Pour-on treatment for control of cattle grubs. BN-35060

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